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To: Examiner Peter Lish
 Firm: Art Unit 1754
 Fax No.: 703-305-6078
 Comments:

From: Phillip Decker
 Date: September 15, 2003
 Pages (including cover): 6

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Joanna L. Duncan,
 Christopher R. McLarnon, and Francis R. Alix
 Serial No.: 09/683,267
 Confirmation No.: 3355
 Filed: 12/06/2001
 For: NO_x, Hg, AND SO₂ REMOVAL USING
 AMMONIA

Examiner: Peter Lish
 Group Art Unit: 1754

Commissioner for Patents
 P.O. Box 1450
 Arlington, VA 22313-1450

Dear Sir:

This correspondence is to supply replacement claim sheets, pages 2 - 6 of the Applicants' amendment of 8/26/2003. These replacement sheets are provided at the suggestion of the Office who advised the Applicants that the claims were not submitted in accordance with the new amendment format.


 Phillip E. Decker
 Attorney for Applicants

CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being facsimile transmitted to the Commissioner for Patents (Fax No. 703-305-6078) on September 15, 2003.

Typed or printed name of person signing this certificate: Phillip E. Decker.

Signature: 

1. (currently amended) A process for removing SO₂, NO, and NO₂ from a gas stream comprising the steps of

- a. oxidizing at least a portion of NO in a gas stream to NO₂ with an oxidizing means resulting in a mole ratio of SO₂ to NO₂ of at least 2.5 to 1, followed by
- b. scrubbing at least a portion of SO₂, NO, and NO₂ from the gas stream with a scrubbing solution comprising ammonia, and having a pH between 6 and 8, and
- c. removing at least a portion of any ammonia aerosols generated from the scrubbing step from the gas stream with an aerosol removal means.

2. (original) The process of claim 1, wherein said oxidizing means is an electrical discharge reactor.

3. (original) The process of claim 2, wherein said electrical discharge reactor is a dielectric barrier discharge reactor.

4. (original) The process of claim 3, further comprising the step of oxidizing at least a portion of the NO to HNO₃ with said dielectric barrier discharge reactor.

5. (canceled)

6. (original) The process of claim 1, wherein said oxidizing step is adapted to result in a mole ratio of SO₂ to NO₂ of at least four to one.
7. (original) The process of claim 1, said scrubbing solution comprising ammonia, ammonium sulfite, ammonium sulfate, and water, and having a pH between 6 and 8.
8. (original) The process of claim 1, wherein said aerosol removal means is a wet electrostatic precipitator.
9. (original) The process of claim 1, wherein said scrubbing step results in the formation of ammonium sulfate, the process further comprising the step of withdrawing ammonium sulfate from the scrubbing solution.
10. (original) The process of claim 4, wherein said scrubbing step results in the formation of ammonium nitrate, the process further comprising the step of withdrawing ammonium nitrate from the scrubbing solution.
11. (original) A process for removing SO₂, NO, NO₂, and Hg from a gas stream comprising the steps of
 - a. oxidizing at least a portion of the NO in a gas stream to NO₂, and at least a portion of the Hg in a gas stream to HgO, with an oxidizing means, followed by

- b. scrubbing at least a portion of the SO₂, NO, and NO₂ from the gas stream with a scrubbing solution
 - comprising ammonia, and
 - having a pH between 6 and 8, and
- c. removing at least a portion of any ammonia aerosols generated from the scrubbing step, and HgO, from the gas stream with an aerosol removal means.

12. (original) The process of claim 11, wherein said oxidizing means is an electrical discharge reactor.

13. (original) The process of claim 12, wherein said electrical discharge reactor is a dielectric barrier discharge reactor.

14. (original) The process of claim 11, wherein said aerosol removal means is a wet electrostatic precipitator.

15. (original) The process of claim 11, said scrubbing solution

- comprising ammonia, ammonium sulfite, ammonium sulfate, and water, and
- having a pH between 6 and 8.

16. (original) The process of claim 15, wherein said scrubbing step results in the formation of ammonium sulfate, the process further comprising the step of withdrawing ammonium sulfate from the scrubbing solution.

17. (withdrawn)

18. (withdrawn)

19. (withdrawn)

20. (withdrawn)

21. (withdrawn)

22. (withdrawn)

23. (withdrawn)

24. (withdrawn)

25. (withdrawn)

26. (withdrawn)

27. (withdrawn)

28. (withdrawn)

29. (withdrawn)